

NOTES ON THE SPRING MIGRATION (1907) AT
ANN ARBOR, MICHIGAN.¹

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INTRODUCTION.

FROM the last week in April to June 6, 1907, the writer made almost daily observations on the bird life in the vicinity of Ann Arbor, Michigan. Beginning at 4 A. M., from four to six hours per day were spent in the field, listing all of the species seen and collecting the rarer and doubtful specimens. Unusually low temperatures in May attended by continued snow and ice to the north, apparently prevented large numbers of the migrant warblers from leaving this vicinity until the last of May and the first of June, giving us the latest records on our migration lists, and furnishing rare opportunities for observation and study of these and other species.

GENERAL CONDITIONS.

January, 1907. This was not a cold month for this region, as the average temperature was only 20.6° F. But few winter visitors were seen; a few Pine and Evening Grosbeaks, one small flock of White-winged Crossbills, a few Pine Siskins, and several flocks of Redpolls, make up the list of recorded species. Several small colonies of Red-headed Woodpeckers wintered in heavy oak woods, and numbers of Song Sparrows along the streams. The former is a rare winter resident in this vicinity although the latter is common.

February. As a whole this was also a relatively mild month, the average temperature being 18.1°, and the Robin, Bluebird and Meadow Lark came (before Feb. 26) earlier than the average arrival, which is the first week of March.

March. The first part of March was colder and for the first ten days the temperature was below the normal (29.1°). No migrants were seen until the 10th. From the 10th to the 21st,

¹ From the University Museum, University of Michigan.

the temperature was above the normal most of the time, and from the latter date to March 31, the departure from the normal was considerable, the increase over the usual temperature ranging from ten to twenty degrees per day. The maximum (71°) was on March 27. The temperature for the month was 34.6° . The continued warm weather of the last week may have caused the large number of migrants; 27 species being recorded after the 21st.

April. This was an unusually cold month, the average temperature being 35.1° , nearly the same as that of March, making this the coldest April in Michigan since 1874. Only three species of migrants were seen before April 18, when the first warbler (Myrtle) was seen. This was only three days later than our earliest record for this species. From April 18 to 30, 31 species of birds were noted and, notwithstanding the cold weather, several of the early warblers arrived; the Yellow and the Pine Warblers on April 26.

May. This month was also very cold with some snow and ice, with many hard frosts as late as the 28th. The average temperature was 44.5° , or 7.6° below the normal. These conditions did not seem to affect the bird migration, as the species continued to come with very little variation from the usual dates of arrival. This was especially true of the earlier warblers, and the most of them arrived at about the average date for the species in spite of the fact that all vegetation was at least two weeks later than common. But notwithstanding the fact that most of the species arrived here at the usual date, they continued to linger long after that time. Nor was it the spring migrants alone that lingered, but several of the winter visitants also, as the Pine Siskin was seen on May 17, the White-throated Sparrow on May 21 and the Junco on May 22. Associated with these species I found the Cape May, Palm, Blackpoll, Bay-breasted, Chestnut-sided, Tennessee, Myrtle, Magnolia, Black-throated Blue, and Black-throated Green Warblers. On the morning of May 21 I found ice one eighth of an inch thick that had formed in a boat on the beach at Portage Lake, Washenaw County, Mich., but all the birds just mentioned were seen along the bluff near this lake, and again on June 2, with the exception of the Junco, White-throated Sparrow, Palm, and Cape May Warblers, which were not seen after May 22. The morning of May 28 was cold with a hard white frost and a temperature of 34° ,

but I found six Wilson's, three Mourning, and two Connecticut Warblers. These three species are rare here as a rule, but this year they occurred in unusual numbers.

I give below a list of migrant warblers with the dates of arrival, and departure, and it will be seen that most of the latter dates are later than any previous records for this region. In the appended list I have given the earliest dates on which most of our spring migrants were observed here this year.

List of migrant Warblers giving the earliest and latest Spring Records in 1907.

	Earliest Record.	Latest Record.
1. Myrtle Warbler.....	April 18	June 3.
2. Yellow Warbler.....	April 26	
3. Pine Warbler.....	April 26	May 2.
4. Black-and-White Warbler.....	April 27	May 28
5. Palm Warbler.....	April 29	May 22.
6. Black-throated Green Warbler.....	April 29	June 6.
7. Nashville Warbler.....	May 3	June 3.
8. Blackburnian Warbler.....	May 9	June 6.
9. Chestnut-sided Warbler.....	May 9	June 6.
10. Black-throated Blue Warbler.....	May 9	May 30.
11. Magnolia Warbler.....	May 9	June 6.
12. Prairie Warbler.....	May 12	May 15.
13. Tennessee Warbler.....	May 12	June 6.
14. Parula Warbler.....	May 12	May 16.
15. Canadian Warbler.....	May 13	June 2.
16. Kirtland Warbler.....	May 13	May 16.
17. Hooded Warbler.....	May 13	May 13.
18. Prothonotary Warbler.....	May 13	May 21.
19. Bay-breasted Warbler.....	May 13	June 6.
20. Black-poll Warbler.....	May 16	June 6.
21. Connecticut Warbler.....	May 18	June 6.
22. Cape May Warbler.....	May 21	May 21.
23. Mourning Warbler.....	May 28	May 31.
24. Wilson's Warbler.....	May 28	June 6.
25. Golden-winged Warbler.....	May 11	
26. Cerulean Warbler.....	May 15.	

CONCLUSION.

By comparing these dates of arrival with my table of migration for 25 years (Eighth Report, Michigan Academy of Science, 1906, pp. 151-157), I find they correspond very closely with the average dates of arrival as given there, showing that this year the later migrants arrived in this locality at about the same date, and further that very few are later than usual, notwithstanding the cold and the fact that all vegetation was at least two weeks later than usual. This favors the belief that these birds are not governed exactly in their northward migration by weather or food conditions, but that while they may start out on their migration only under favorable conditions, they often migrate into regions of unfavorable conditions before being checked. Thus the species that reached this locality were in fine condition, but as the conditions here as well as to the northward were unfavorable, many individuals remained here an unusually long time. This was strikingly illustrated by the fact that many of those that migrate the farthest north were the last to leave this locality. I found no evidence of mortality here, due to weather or food conditions, but Miss Harriet Wright of Saginaw, Mich., wrote me that on the morning of May 27 (following a severe night with snow and ice), she picked up numbers of dead warblers of the following species: Tennessee, Canadian, Chestnut-sided, Magnolia, Blackburnian, and Black-throated Green Warblers.

Furthermore, as proof that birds of many species do migrate far ahead of safe weather and food conditions, Prof. W. H. Munson of the State Normal School, Winona, Minnesota, has given me the following statement: "The weather was cold in May, and the vegetation very backward, insect life was scarce and the migrants (which came a little later than usual) had hard work to find sufficient food. This fact combined with the severe cold and storms caused the death of hundreds of birds of many different species. The greatest mortality seemed to be among the Flycatchers of which the Least Flycatcher seemed to suffer the most. A boy brought to me a peck basket nearly full of birds, consisting principally of this species, which he had picked up along the bluff where the birds went for protection from the storms. Large numbers of Black-and-White Warblers were found dead, and the

Tennessee Warblers suffered nearly as great a loss, as did also the Nashville Warblers. A few Chestnut-sided, Bay-breasted, and Black-poll Warblers, were found dead. [The small number found of the last three may be accounted for by these species being late arrivals, thus encountering better conditions.] Four Palm Warblers, 2 Baltimore Orioles, 1 Rough-winged Swallow, 2 Purple Martins (the most of the last species did not arrive until warmer weather), 1 Rose-breasted Grosbeak, 1 Red-eyed Vireo, 6 Oven-birds, a few Prothonotary Warblers and several Yellow-breasted Chats were also brought in dead. The Myrtle Warbler was very abundant, but only a few were found dead, [possibly owing to their great diversity of diet, being able to eat seeds and food not available to most warblers]. The Yellow Warbler also seemed hardy, as none were found dead. The mortality must have been large, as no effort was made to collect these dead birds, and nearly all were picked up by school children. All birds observed were very emaciated and the stomachs and intestines were empty."

List of Spring Migrants, exclusive of Warblers, giving date when first seen.

1. Meadowlark	Feb. 6.	21. Cooper's Hawk	Mar. 22.
2. Bluebird	Feb. 20.	22. House Wren	Mar. 22.
3. Robin	Feb. 25.	23. Purple Martin	Mar. 23.
4. Red-tailed Hawk	Mar. 10.	24. Chipping Sparrow	Mar. 23.
5. Red-shouldered Hawk	Mar. 10.	25. Great Blue Heron	Mar. 23.
6. Rusty Blackbird	Mar. 10.	26. Black Duck	Mar. 23.
7. Red-winged Blackbird	Mar. 13.	27. Tufted Titmouse	Mar. 24.
8. Killdeer	Mar. 13.	28. Field Sparrow	Mar. 24.
9. Bronzed Grackle	Mar. 15.	29. Hermit Thrush	Mar. 24.
10. Cowbird	Mar. 16.	30. Broad-winged Hawk	Mar. 24.
11. Marsh Hawk	Mar. 16.	31. American Bittern	Mar. 25.
12. Woodcock	Mar. 16.	32. Yellow-bellied Sap-	
13. Towhee	Mar. 16.	sucker	Mar. 26.
14. Swamp Sparrow	Mar. 16.	33. Loon	Mar. 28.
15. Prairie Horned Lark	Mar. 16.	34. Ring-billed Gull	Mar. 28.
16. Pewee	Mar. 22.	35. Greater Yellow-legs	Mar. 30.
17. Winter Wren	Mar. 22.	36. Red-head Duck	Mar. 30.
18. Fox Sparrow	Mar. 22.	37. Ruddy Duck	Mar. 30.
19. Vesper Sparrow	Mar. 22.	38. American Coot.	Mar. 30.
20. Golden-crowned King-		39. Tree Swallow	Mar. 30.
let	Mar. 22.	40. Lesser Scaup Duck	Mar. 30.

41. Red-bellied Wood-pecker	Mar. 31.	75. Wilson's Thrush	May 3.
42. Pied-billed Grebe	Mar. 31.	76. Rose-breasted Gros-beak	May 3.
43. American Osprey	April 1.	77. Ovenbird	May 5.
44. Brown Thrasher	April 3.	78. Sora Rail	May 5.
45. Wilson's Snipe	April 5.	79. Least Flycatcher	May 5.
46. Greater Scaup Duck	April 18.	80. Louisiana Water-thrush	May 6.
47. Bufflehead Duck	April 19.		May 6.
48. Hooded Merganser	April 20.	81. Florida Gallinule	May 6.
49. Bank Swallow	April 20.	82. Wood Pewee	May 9.
50. Barn Swallow	April 20.	83. Solitary Vireo	May 9.
51. Sharp-shinned Hawk	April 20.	84. Long-billed Marsh Wren	May 9.
52. Olive-backed Thrush	April 20.		May 10.
53. White-throated Sparrow.	April 23.	85. Warbling Vireo	May 10.
54. Chimney Swift	April 24.	86. Alder Flycatcher	May 10.
55. Blue-gray Gnatcatcher	April 27.	87. Yellow-throated Vireo	May 12.
	April 27.	88. Crested Flycatcher	May 12.
56. Cliff Swallow	April 27.	89. Green Heron	May 12.
57. Bonaparte's Gull	April 27.	90. Common Tern	May 12.
58. Spotted Sandpiper	April 27.	91. Horned Grebe	May 12.
59. Virginia Rail	April 27.	92. Scarlet Tanager	May 13.
60. Rough-winged Swallow	April 27.	93. Red-eyed Vireo	May 13.
61. Bartram's Sandpiper	April 28.	94. Ruby-throated Hummingbird	May 13.
62. Bobolink	April 28.	95. Black-billed Cuckoo	May 13.
63. Wood Duck	April 28.	96. Yellow-billed Cuckoo	May 13.
64. Northern Yellow-throat	April 28.	97. Indigo Bunting	May 14.
	April 28.	98. Whip-poor-will	May 14.
65. Kingbird	April 28.	99. Least Bittern	May 15.
66. Pin-tail Duck	April 28.	100. Orchard Oriole	May 15.
67. Baltimore Oriole	April 28.	101. Pine Siskin	May 17.
68. American Redstart	April 29.	102. Black Tern	May 18.
69. Red-breasted Merganser	April 29.	103. Night Hawk	May 18.
70. Alice's Thrush	April 29.	104. Turkey Vulture	May 29.
71. Lark Sparrow	May 1.	105. Yellow-bellied Flycatcher	May 30.
72. Catbird	May 1.	106. Philadelphia Vireo	May 30.
73. Red-breasted Nuthatch	May 1.	107. Olive-sided Flycatcher	June 6.
74. Wood Thrush	May 2.		